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Blue Grouse
Dendragapus Obscurus

Range:
Blue grouse range from southern Alaska, the south Yukon, southwest Mackenzie, and west Alberta southward along the offshore islands to Vancouver and along the coast to northern California, and in the mountains to southern California, and north and eastern Arizona and west central New Mexico (Johnsgard 1973). This range includes the northern and central Rocky Mountains and Pacific coastal regions of western North America (Aldrich 1963).

Washington Distribution:
Blue grouse are found in mountainous areas throughout the state, whenever open coniferous forests are present (Soil Conservation Service 1969). They are closely associated with true fir (Abies) and Douglas fir (Pseudotsuga) forests (Johnsgard 1973). Hunter survey results from the 1989 season indicated that blue grouse were harvested from all counties except: Adams, Benton, Franklin, Grant, Island, and San Juan (Washington Department of Wildlife unpublished data).

Habitat Requirements:
Blue grouse breed in open foothills and are closely associated with streams, springs, and meadows. Much of the food they require comes from the succulent vegetation growing in these areas. In fall they migrate to higher elevations where they winter on fir needles. (Soil Conservation Service 1969).

Blue grouse have strong fidelity to wintering areas and require large fir trees for food and roosting (Cade 1984). Fir (Abies) needles constitute 60 percent of the blue grouse diet in the area west of the Cascade Mountains (Beer 1943). In other areas, true fir and Douglas fir are the major food sources. They are often supplemented with larch and pine needles (Boag 1963). Important forbs and grasses in drier climates include: balsamroot, buckwheat, dwarf mistletoe, dandelion, agoseris, strawberry, clover, sedge, daisy or fleabane, knotweed, manzanita or bearberry, huckleberry, pussy toes, elderberry (fruit), hawksbeard, dock, starwort, lupine, and china lettuce. (Beer 1943, Boag 1963). A study on Vancouver Island indicated that 90 percent of adult blue grouse foods included: bracken fern, willow, Oregon grape, blackberry, huckleberry, salal, and cat's ear (Johnsgard 1973). Insects are an important food source especially for young chicks in the first ten days of life (Beer 1943).

Blue grouse use stream bottoms and gentle slopes during the spring and summer. In the Methow Valley of Washington, 78 percent of survey locations were on slopes of less than ten percent (Washington Department of Game 1961).

Conifer thickets are a key component of male breeding areas. The edges of these thickets and clearings are characteristic of high quality breeding habitat. Selective logging and small clearcutting produces good blue grouse habitat by creating uneven aged timber stands with numerous 20 to 60 year old thickets (Martinka 1972).

Nests are usually located near logs, or under low tree branches in open timber (Johnsgard 1973). In Idaho, Smith (1990) states that nesting occurs in brushy areas with tall sagebrush providing the most preferred sites.

Broods use areas with high plant density, interspersion of types, and high canopy coverage. Bare ground should be less than 11 percent and the average effective height of grass and forbs should be 20 cm (8"). Grass and forb cover in areas of highest use range from 53 to 85 percent. The forb component of high use areas is 11 to 41 percent. Typically, broods feed within 90m (100 yd) of brush/tree cover. As the broods get older, they switch to riparian areas and shrubby vegetation (Mussehl 1962).

Limiting Factors:
Current reforestation practices of high density replanting, herbicide application and fertilization result in rapid tree canopy closure which reduces blue grouse use (Zwickel and Bendell 1985, Bendell and Elliott 1967). In drier areas, intense grazing of open lowland forests reduces the quality and availability of breeding habitat (Mussehl 1962, Seaburg 1966, Zwickel 1972).

Management Recommendations:
Logging activity and fire in the low to mid-elevations can open up the forest canopy which may improve breeding habitat, but heavy grazing on lower slopes can be deleterious (Johnsgard 1973). Preferred brooding areas for blue grouse include grass and forb communities that are up to 30cm (12") high. Deferred or moderate grazing preserves nesting, brooding, and feeding cover (Soil Conservation Service 1969). Grazing should be managed for maximum forb production. The grazing intensity must be light enough to allow grass/forb vegetation to reach an effective, standing height of 20cm (8") (Mussehl 1962, Seaburg 1966).

In densely forested areas like Vancouver Island, Canada, openings created by logging and fires are very important to blue grouse. Succession is naturally rapid, but is accelerated by dense plantings of Douglas fir. Allowing the tops of hills and low productivity sites to remain unplanted would be beneficial to blue grouse as breeding areas (Zwickel and Bendell 1985, Johnsgard 1973). Forbs should always be included in seed mixes when reseeding range and forest land where blue grouse occur (Seaburg 1966). Mussehl's (1962) study showed that blue grouse preferred sites composed of at least 11 percent forbs.

Cade (1984) recommended the use of clearcuts smaller than 250m (800') across

and leaving at least 40 trees per hectare with a minimum 24cm (9") dbh on wintering areas. Selective cuts or long rotations greater than 60 years are also better for wintering blue grouse than clearcuts (Cade and Hoffman 1990). Retain known winter roost areas including mature, mistletoe-laden Douglas fir thickets near ridges (McKeel and Quinn pers. comm.).

References:

Aldrich, J.W. 1963. Geographic orientation of American Tetraonidae. J. Wildl. Manage. 27:529-545.

Beer, J. 1943. Food habits of the blue grouse. J. Wildl. Manage. 7(1):32-44.

Bendell, J.F. and P.W. Elliott. 1967. Behavior and the regulation of numbers in blue grouse. Canadian Wildlife Service. 76 pp.

Boag, D.A. 1963. Significance of location, year, sex, and age to the autumn diet of blue grouse. J. Wildl. Manage. 27(4):555-562.

Cade, B.S. 1984. Winter habitat preferences and migration patterns of blue grouse in Middle Park Colorado. Colorado Fish and Game (W-37-R) 01-03-045.

Cade, B.S. and R.W. Hoffman. 1990. Winter use of Douglas fir forests by blue grouse in Colorado. J. Wildl. Manage. 54(3):471-479.

Johnsgard, P.A. 1973. Grouse and quails of North America. Univ. Nebraska Press, Lincoln. 533 pp.

Martinka, R.R. 1972. Structural characteristics of blue grouse territories in southwestern Montana. J. Wildl. Manage. 36(2):428-510. p. 263-354.

McKeel, Roger. Wildlife Program Manager, Region Three, Wash. Dept. of Wildlife, Yakima.

Mussehl, T.W. 1962. Some physical characteristics of ground vegetation used by blue grouse broods. Unpublished Report Montana Fish and Game Department. 11 pp.

Quinn, Mark, Wildlife Program Manager, Region Two, Wash. Dept. of Wildlife, Ephrata, WA.

Seaburg, K. 1966. The big blue grouse. Montana Wildlife. pp. 23-27.

Smith, R.B. (preparer). 1990. Forest grouse management plan. Pages 40-46 in Upland Game Management Plan 1991-1995. Idaho Department of Fish and Game, Boise.

Soil Conservation Service. 1969. Habitat management for blue grouse. USDA Soil Conservation Service, Spokane, WA. 2 pp.

Washington Department of Game. 1961. Population study of blue grouse, north central Washington. W64-R-3. 11 pp.

Zwickel, F.C. 1972. Some effects of grazing on blue grouse during summer. J. Wildl. Manage. 36(2):631-634.

Zwickel, F.C. and J.F. Bendell. 1985. Blue grouse-effects on and influences of a changing forest. Can. Institute of Forestry. 61(2):185-188.

Key Points:

Habitat Requirements:

- Open forests in the low to mid elevations for breeding areas.
- Rangeland that has 8" tall vegetation from May through August, during the brood rearing stage.
- The vegetation should have from 11 to 40 percent broadleaf plants (forbs).
- Insects are important for the first several days of life for young chicks.
- Wintering areas in higher elevations that contain Fir (Abies) and Douglas fir (Pseudotsuga) forests.

Management Recommendations:

- Selective cutting or small clearcuts should be conducted in areas known to contain wintering or breeding blue grouse.
- At least 100 trees per acre that are larger than 9" dbh should be left standing.
- Openings should be less than 800 ft. wide to allow blue grouse movement across them.
- Retain known winter roosts, including mature Douglas fir thickets near ridges.
- All logging operations should include revegetation with a high percent age of forbs and a variety of trees rather than single plantings that include one or two species.
- Grazing should be light so that an effective height of 8" for grasses and forbs is maintained from May through August. Another option would be to postpone grazing until after August 1.
- Streams, springs, and meadows should be protected from livestock grazing and logging operations so that lush vegetation, shrubs, and deciduous trees remain for blue grouse brooding and feeding.

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